MuonGeoModel
and
Alignment Parameters

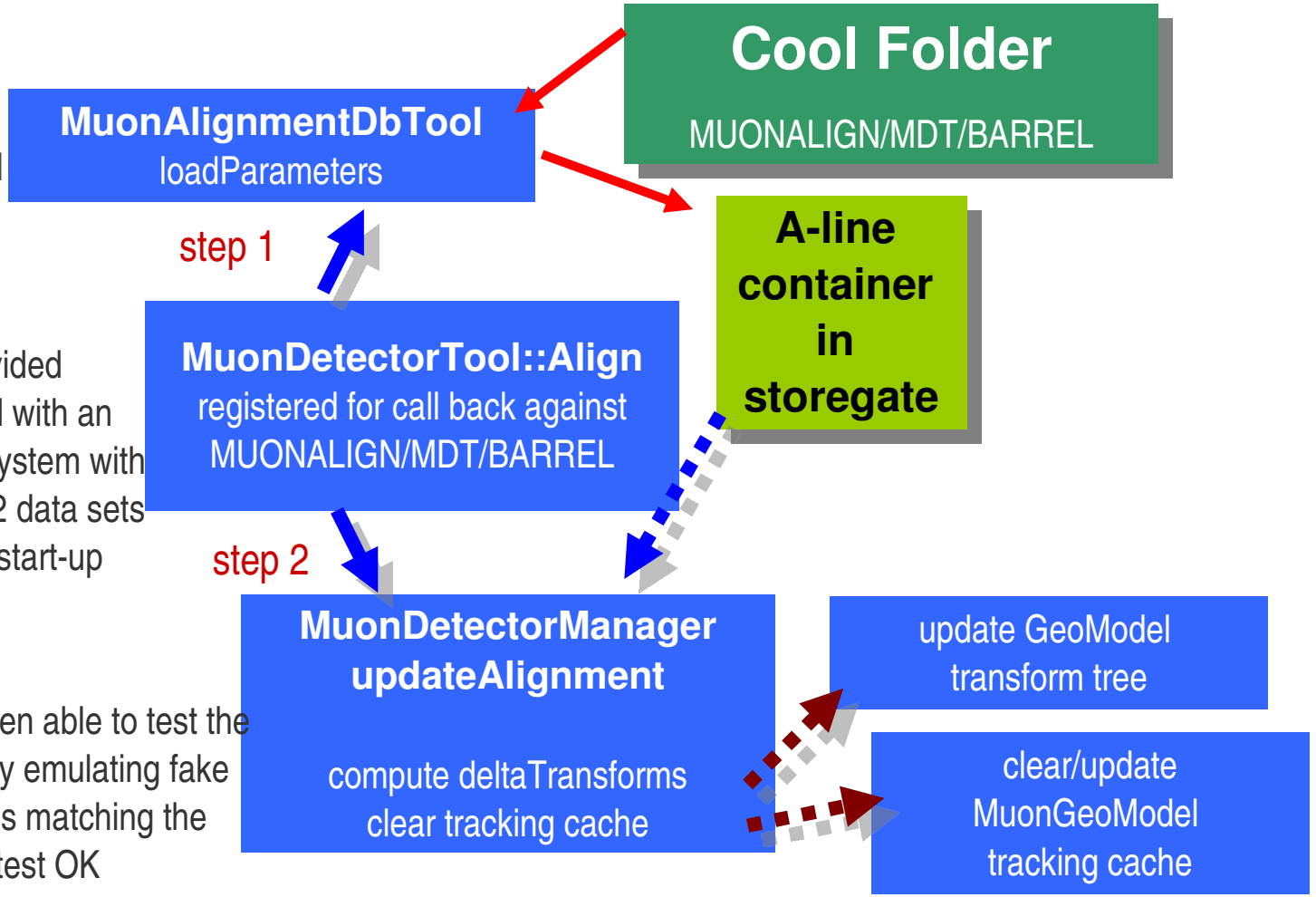
FDR2: alignment constants loaded run-time

System tested up to reconstruction ~1 year ago with old COOL versions and run/event based IoV definition

The Alignment wg provided Alines in COOL computed with an emulation of the optical al. system with IoV in the range of the FDR2 data sets just in time for the FDR2 start-up

Before FDR2 we have been able to test the access to the condDB by emulating fake events with time-stamps matching the A-lines IoV --- test OK

but no integration of reconstruction



unable to test with coherent sim. data + cond. data in advance

FDR2: alignment constants loaded run-time

In the FDR 2 we were in the following situation:

- MuonGeoModel was accessing the A-lines from Cool via the MuonAlignmentDBTool correctly; it was updating the transforms of the stations in MuonGeoModel and it was providing to clients (Muonboy) the pointer to the A-line container in the DetStore; However, after the update of the global transform of a given station, it was not clearing correctly the reconstruction cache of all the detectors in that station

  => if Moore were asking:

  --- MdtReadoutElement::tubePos(Id) the answer were correct

  --- MdtReadoutElement::center(Id) the answer were wrong (not updated with A-lines)

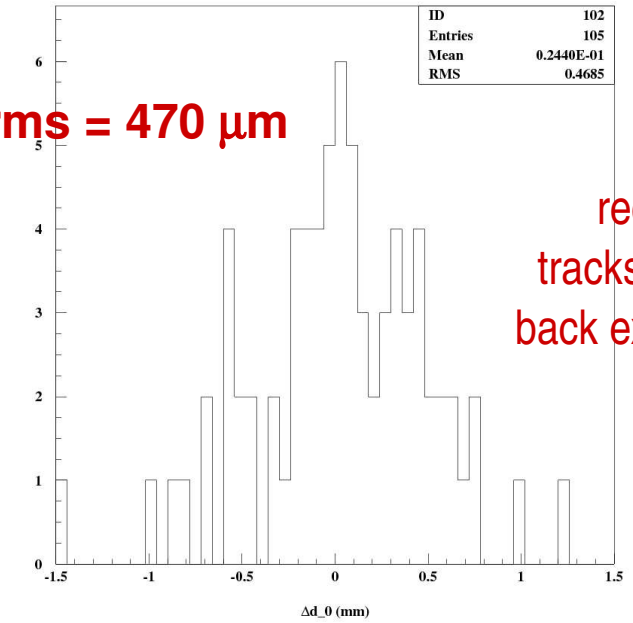
  This bug in MuonGeoModel was also the reason of the crash (or need to disable) the MuonTrackingGeometry; the tag MuonGeoModel-00-05-25-01 is curing this problem... It is not curing the crash anyway !

- MuonBoy was not getting A-lines (not via MuonGeoModel and not even via DetectorStore) because of a bug in AmdcsimrecSvc: however it (as well as Moore) was seeing the input prd re-located by the updates of transforms in MuonGeoModel;
  - It crashed just because of a check of consistency between its internal geometry model (where the A-lines were not correctly propagated) and MuonGeoModel

FDR2: alignment constants loaded run-time

- From the test on run 522090, before trying in FDR2
  - with MuonTrackingGeometry disabled and the extra conf. options

Full reconstruction has been run and the effect of *loading/not-loading* the alignment constant was observed in muon reconstruction

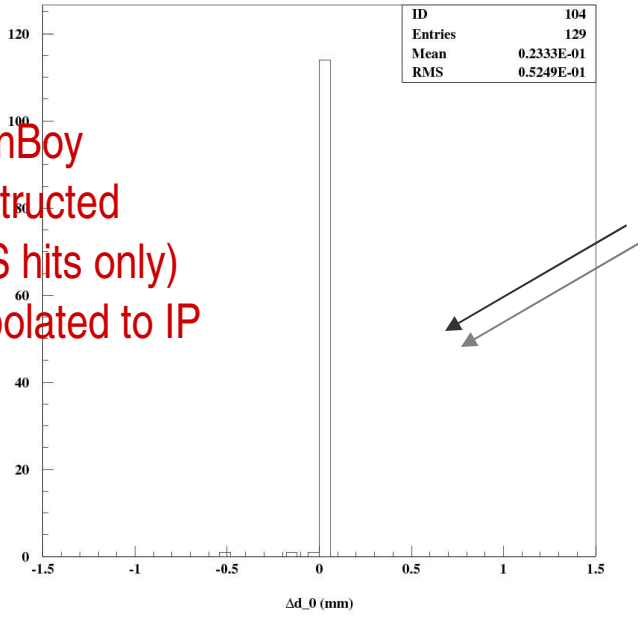


rms = 470 μm

$d0^{condData}$-$d0^{def.reco}$ /mm

barrel

MuonBoy reconstructed tracks (MS hits only) back extrapolated to IP



$d0^{condData}$-$d0^{def.reco}$ /mm

endcaps

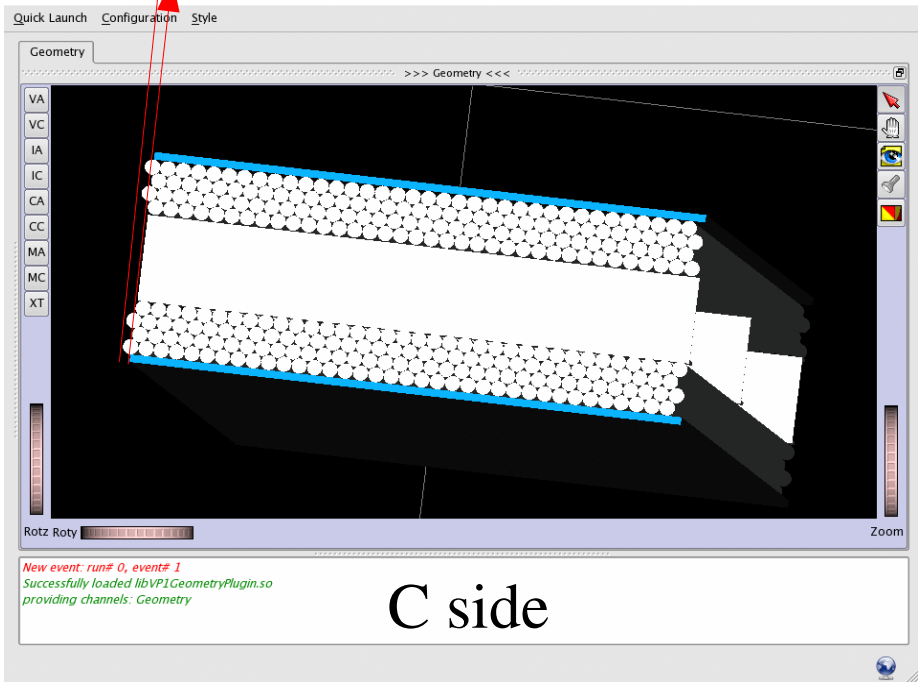
No diff. in the output of reco.
in ECs since only barrel A-lines were read from COOL and passed to Muonboy by the MuonGeoModel MuonDetectorMgr

Summary of Muon DD functionality in recent and future releases

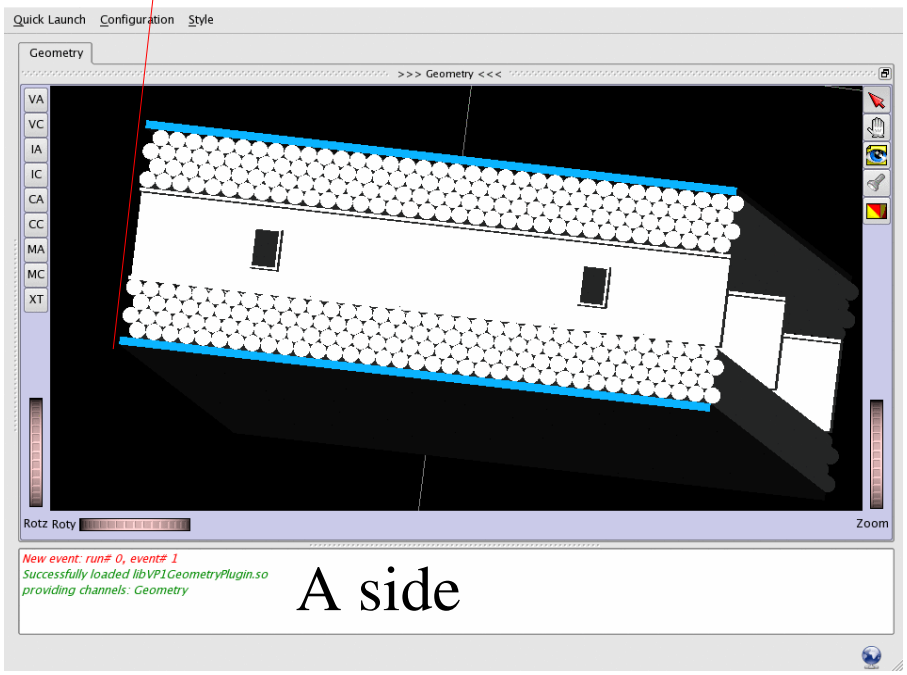
- *fixes required for Alignment in GeoModel and Amdc are collected for 14.2.10*
  - *should be collected for the p-cache of the FDR2 for further tests*
- *more then one folder – prototype of MuonAlignmentDbTool modified to read more folders*
  - *testing now*
  - *requires minimal change in MuonGeoModel*
  - *hopefully by tomorrow we'll have new tags submitted for 14.2.10*

MuonGeoModel vs Amdc

Left-arrow: MuonGeoModel <00-05-29 – similar to A-side



C side



A side

Right-arrow(C-side): MuonGeoModel-00-05-29
recover the ~10microns disagreements wrt Amdc
when A-lines are applied